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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,907	07/24/2003	Nobumasa Abe	Q76663	1205
23373	7590	08/23/2004	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LEE, PETER	
			ART UNIT	PAPER NUMBER
			2852	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,907

Applicant(s)

ABE, NOBUMASA

Examiner

Peter Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/17/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the image density detecting means which is disposed in proximity to one of the said rollers which is the nearest to the pivot of the support frame as written on page 7 lines 3-5 and seen in claim 3, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because:

On page 33 line 3, application refers to a paper carrying belt 59 in Fig. 12. However Fig. 12 does not contain a paper carrying belt 59 but rather an intermediate transfer belt 16.

On page 33 line 11, application refers to an intermediate transfer belt in Fig. 14. However Fig. 14 does not contain an intermediate transfer belt but rather a paper carrying belt 16.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means"

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and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because of the use of legal terminology found throughout the abstract including; "comprises", "said", and "means". Correction is required.

See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities:

When referring to a measurement of volume resistivity as on page 11 line 20, must use corresponding unit. Replace " $\Omega \cdot cm$ " with " $\Omega \cdot cm^3$ ".

Appropriate correction is required.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 4 refers to an embodiment of the invention where the density detecting means is located by a roller nearest the pivot means. No such embodiment or a reason for such placement can be found in the specification and therefore lacks antecedent basis in the claim.

Claim Objections

6. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim the second seen claim 3 has been renumbered claim 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (U.S. pn 6343198) in view of Endo (U.S. pa 2002/0085849). As to claim 1 and the renumbered claim 4, Sato teaches an image forming apparatus(Fig. 4) comprising image forming stations for respective colors arranged along a belt(Fig. 4 part 10) (ie. transfer belt), each said image forming station including an photoconductive drum(Fig. 4 part 1) (ie. image carrier), a charger(Fig. 1 part 2) (ie. charging means), and a developing device(Fig. 4 part 3) (ie. developing means) disposed around said image carrier, said image forming apparatus further comprising an apparatus body

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(ie. housing body) in which said image forming stations and said transfer belt are situated (column 1 lines 36-38), a cassette structure(Fig.4 part 16) (ie. support frame) for belt rollers(Fig. 4 parts 10A and 10B) (ie. support rollers) around which said transfer belt is laid with some tension, wherein said support frame is attached to the housing body such that the support frame is detachable relative to the housing body by means of pivotal movement(column 4 lines 17-24), said image forming apparatus being characterized by further having a locking means for locking said support frame to the housing body(col. 4 lines 25-26).

Sato does not teach having a density detection sensor, or the positioning of such a sensor, as part of an image forming apparatus. Further, Sato does not teach the use of an intermediate transfer belt as a transfer means in an image forming apparatus.

As to claims 1 and the renumbered 4, it is Endo who teaches the use of an image density detecting sensor in an image forming apparatus, positioned such that the image density detecting sensor faces the transfer belt (paragraph [0057]). Positioning the sensor either by the locking means, as in claim 1, or the pivot means, as in claim 4, is deemed non-critical according to *In re Cole* , 140 USPQ 230 (CCPA 1964) for not being fully disclosed in the specification prior to the claims. It would have been obvious to a person of ordinary skill at the time of the invention to utilize an image density detecting sensor in an image forming apparatus. One of ordinary skill in the art would have been motivated to utilize an image density detecting sensor in order to serve the dual purpose of detecting the relative positions of the respective color toner images for image alignment and to detect the toner density levels to account for stabilizing toner levels in the images (page 5 paragraph [0076]). Further, one of ordinary skill in the art would have been motivated to position the image density detecting means at the top of the apparatus to avoid

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degradation of the apparatus by avoiding toner spillage onto the detecting means as well as unwanted heat generation from the fixing means (paragraph [0077]).

As to claim 2 and 5, Sato in view of Endo teaches everything in claim 1 and the renumbered 4 stated above. Further, Sato teaches the use of a paper carrying belt in his patent in column 3 lines 51-56.

8. Claim 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato and Endo, in view of Kusaba (US pa 2002/0090234). Sato and Endo teach everything as stated above with respect to claims 1 and renumbered claim 4. Further, Kusaba teaches the use of an intermediate transfer belt in an image forming apparatus. It would have been obvious at the time of the invention for one with ordinary skill in the art to use an intermediate transfer belt. The motivation for such an action is that an intermediate transfer belt has the advantage of not requiring any processing or control for the transfer material and it also has the advantage of utilizing a wide range of transfer materials regardless of length, width, or thickness (Kusaba page 1 paragraph [0011]).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Lee whose telephone number is 571-272-2846. The examiner can normally be reached on mon-fri 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL 8/19/2004

A handwritten signature in black ink, appearing to read 'Arthur T. Grimley', with a stylized, flowing script.

**Arthur T. Grimley
Supervisory Patent Examiner
Technology Center 2800**